

ATOMIC PHOTOGRAPHY

BLASTS FROM THE PAST

Twenty-five U.S. atmospheric nuclear weapons operations (each a series of tests) were conducted from 1945 to 1963, primarily at the Pacific Proving Grounds and at the Nevada Test Site, southeastern Nevada.

Below, observers witness Operation Greenhouse, Eniwetok Atoll, spring 1951. Greenhouse was a series of four tests.





Proof of principle for thermonuclear weapons, the 225-kiloton George test, May 8, 1951, of Operation Greenhouse, Eniwetok Atoll, Marshall Islands. Greenhouse George was an 8-foot by 2-foot disk, detonated on a tower on Eniwetok Atoll. George led to the development of thermonuclear weapons.



The world's first full-scale thermonuclear device, the 10.4-megaton Mike shot of Operation Ivy, October 31, 1952, Eniwetok Atoll. Ivy Mike was a 54-ton cylinder, almost 19 feet tall, in an aluminum building—essentially, an exploding house.



The first U.S. airdropped thermonuclear bomb, the 3.8-megaton Cherokee test of Operation Redwing, May 20, 1956, Bikini Atoll. Redwing Cherokee, one of 17 Redwing tests, was a true bomb. . . and a big one—about 3 feet wide, 11 feet long, and 6,867 pounds. It was dropped from a B-52.



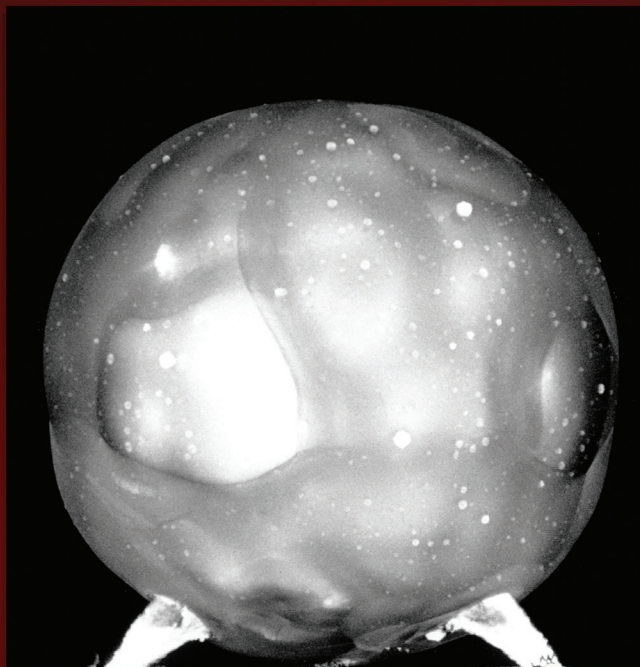
The first underwater test of a nuclear weapon, the 21-kiloton **Baker test**, July 24, 1946, **Bikini Atoll**. One of two tests for Operation Crossroads, Baker raised a huge pillar of irradiated water. The bikini swimsuit was named for the Crossroads test site, the swimsuit's designer explaining that it, like a nuclear bomb, was "small, but devastating."



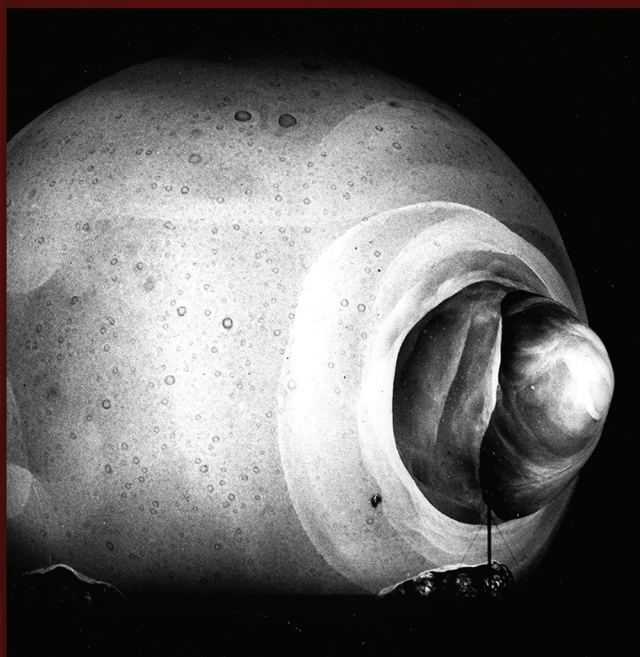
The **Grable test of Operation Upshot-Knothole**, May 25, 1953, **Nevada Test Site**. The 11-inch diameter nuclear cannon, "Atomic Annie," fired an 803-pound nuclear shell, with a yield of 15 kilotons, almost 20 miles. The nuclear shell was the same general design as the Hiroshima bomb, whose yield it exceeded. Atomic cannons were fielded in 1953 in both Europe and Korea and retired in 1963.



The 210-kiloton **Truckee test of Operation Dominic**, June 9, 1962, **Christmas Island, Pacific Ocean**. The Dominic test series of 36 tests was the final U.S. atmospheric test series. The airdropped Truckee test device, a missile warhead, produced a spectacular mushroom cloud that exhibited "skirts," the bell-like shapes seen here descending the mushroom's stalk.



Nuclear fireball of the 14-kiloton, tower-supported How test, Operation Tumbler-Snapper, June 5, 1952, Nevada Test Site. Captured by a "rapatronic" camera in an exposure of just 4–5 millionths of a second. The fireball is shown here just thousandths of a second after detonation. The fireball seems to stand on glowing stalks—the tower's guy-wires being consumed in a phenomenon called a "rope trick."



Rapatronic photo of the 360-kiloton Mohawk test's fireball, Operation Redwing, July 2, 1956, Eniwetok Atoll. Most test detonations included side experiments, detonated by the radiation from the main test. One such side test produced the secondary explosion seen here protruding from the fireball's right side.



Another rapatronic image, the 19-kiloton Whitney shot, Operation Plumbbob, September 23, 1957, Nevada Test Site. X-rays generated by the detonation strip electrons off atoms in the air. The electrons then rejoin the atoms, producing a flash of electrical discharge that creates the feathery light seen here.



Smokey, a 44-kiloton shot, Operation Plumbbob, August 31, 1957, detonated atop a 700-foot tower, Nevada Test Site.

The U.S. military needed to know how well soldiers would physically and mentally handle fighting on a nuclear battlefield. Approximately 18,000 soldiers, representing each branch of the military, participated in military exercises during Operation Plumbbob.



Military maneuvers during Operation Tumbler-Snapper, May 1, 1952, Nevada Test Site.

RKO-Pathe produced a short documentary motion picture about Marines in action at the test site. The film was titled "Operation A-Bomb."



Operation Tumbler-Snapper, Nevada Test Site. Marines exhibit a decidedly lighthearted attitude toward nuclear weapons.



Photographic cargo for a nuclear test. Each atmospheric nuclear test was photographed by 40 to 50 cameras, although one test series required 200. One million still photos were taken during the two-shot 1946 series, Operation Crossroads. Here, a B-29 stands ready to be loaded with the staggering amount of photographic equipment needed for one series of tests.



In the path of the shock wave.

Several miles from ground zero at the Nevada Test Site, photographers brace themselves against the arrival of the shock wave, 30 seconds after detonation. Photographers were first blinded by the explosion's flash of light. The shock wave arrived seconds after the flash.



Film disintegration. Age is the enemy of film. This decomposing original film of the July 16, 1945, Trinity Test, the world's first nuclear explosion, was destroyed by a form of decay called vinegar syndrome, named for its odor. When Spriggs and his associates opened this film's metal container, he says, "the vinegar odor almost keeled us over." ✦

~Eileen Patterson